

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 200309501PFO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/IL2003/000879	International filing date (day/month/year) 26.10.2003	Priority date (day/month/year) 26.10.2003
International Patent Classification (IPC) or both national classification and IPC G03G9/12		
Applicant HEWLETT-PACKARD DEVELOPMENT COMPANY, L.P		



- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12.10.2004	Date of completion of this report 20.01.2006
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IL2003/000879**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-9 as originally filed

Claims, Numbers

1-24 as originally filed

Drawings, Sheets

1/5-5/5 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-24
	No: Claims	
Inventive step (IS)	Yes: Claims	1-24
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-24
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IL2003/000879

1. Reference is made to the following documents:

D1: EP-A-498535

D2: US-A-5346796 (cited in present application)

2. D1 represents the closest prior art, disclosing a process for preparing a liquid developer, which comprises a carrier liquid and toner particles containing thermoplastic resin and a combination of charge controlling agents being a metal soap (e.g. zirconium neodecanoate) and an alkali metal cation (e.g. in form of Na-stearate). Said charge controlling agents correspond to the charge directing and the charge adjuvant components cited in the present application. Both the zirconium neodecanoate and the Na-stearate belong to the category of metal-soaps (or fatty acid metal salts) which is in the patent literature cited as appropriated for use both as charge directing agent and as charge adjuvant agent (see D2: column 2, lines 41-47 and column 2, lines 4-14). In all but one example the charge directing agent and the charge adjuvant agent are added together with a thermoplastic resin to a carrier liquid and milled.

The preparation method according to present claim 1 differs from the D1 method at least in that one of the charge controlling agent, i.e. the one indicated as charge director, is added in an ulterior step, after the milling step involving all the other ingredients. Accordingly the subject matter of present claim 1, and of the dependent claims 2-24, is novel (Article 33(1) (2) PCT).

3. Said novelty providing feature solves the problem of increasing the conductivity of liquid developers as those disclosed in D1.

No further prior art documents make obvious a modification of the D1 process, by adding the charge directing agent in an ultimate step after the milling, instead of adding it to the mixture together with the charge adjuvant agent prior to the milling, in order to solve the problem posed.

Examples and comparative examples demonstrate that the problem is solved by preparing the developer according to the method defined in present claim 1.

Hence the present application meets the criteria of Article 33(1) PCT, because the subject-matter of claim 1, as well as of dependent claims 2-24, does involve an inventive step in the sense of Article 33(3) PCT.

4. In one example of D1 (example 1, Black 3; page 14, lines 19-35 and on page 13, lines 17-23) a preparation method of a liquid developer is described, wherein Na-stearate

(having charge directing properties - see paragraph 2, above) is added after previous forming of toner particles in carrier liquid by grinding of carrier liquid, thermoplastic resin and a solution of zirconium neodecanoate (having charge adjuvant properties - see paragraph 2, above). The forming of the zirconium neodecanoate solution by dissolving the zirconium neodecanoate in a carrier-like solvent, is not explicitly mentioned, but is bound to have been carried out previously. The example 1 (Black 3) of D1 so describes a method for preparing liquid developer which comprises all the features of the method according to present claim 1, except for the step of applying heat during the dissolving of the charge adjuvant in carrier liquid solvent.

Hence the method of present claim 1 is novel over the D1 method as specified in example 1 (Black 3) because of above cited heating feature (Article 33(1) (2) PCT).

Heating chemical components in order to enhance, accelerate, their interaction (in the present case the dissolution of the charge adjuvant into the solvent) is basic praxis in chemistry. So a skilled person could readily apply heat during the dissolution step of the charge adjuvant, in order to speed up the preparation process, modifying so the example 1 (Black 3) method of D1 into the claimed method.

However D1 also specifies that the liquid toner obtained according to the example 1 (Black 3) method has poor toner mobility and so advises against the specific method of example 1 (Black 3), which is based on the addition of the Na-stearate after the milling step (page 15, lines 20-31 in D1).

Hence the skilled person, seeking to provide an improved liquid developer preparation method, would not readily start from the preparation method of the example 1 (Black 3) of D1, which is declared to be ineffective, and so he would not readily modify it either. Accordingly the preparation method of present claim 1 is also inventive over the matter of D1, as disclosed in example 1 (Black 3).

So the example 1 (Black 3) of D1 does not affect the previous judgments regarding novelty and inventive step of the subject matter of claim 1, and of the dependent claims 2-24 of the present application.